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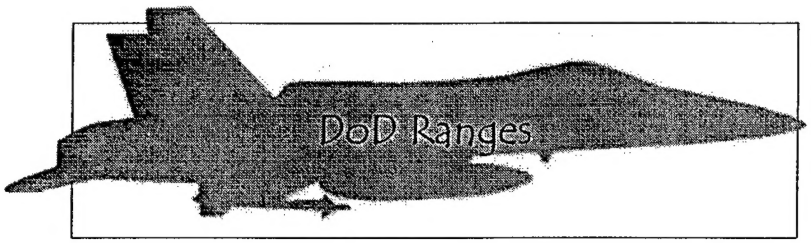
Telemetry Networks



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Data Acquisition Networks T&E Need

- Meet ever increasing data acquisition requirements
  - Driven by complex weapons platforms
  - Faster avionics
  - Increased simulation and modeling
- Timely insertion of leading edge technology
- Future data acquisition systems must be network oriented
- Leverage Telecommunications investment
  - Standards; Hardware; Software

Network Centric Testing

- For many reasons, we are being driven towards commercial network technology
  - Diminishing test funds
  - Diminishing spectral resources
  - Geographically disperse test facilities and assets
    - » Joint test exercises
  - Increased modeling and simulation
    - » including Hardware in the Loop
- Judicious choices of network architectures and protocols makes this work
- Test Networks are required

Traditional Systems

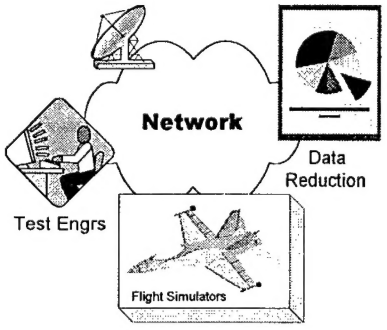
- Operates via standards unique to the instrumentation community (IRIG 106)
  - Does not leverage COTS vast Telecom market
  - Leading edge technology slow to be introduced
- Architectures are based on 20 year old technology
- Does not meet the "network compatibility requirement

On-Board Data Acquisition Networks

- Easily interface with the global network infrastructure
  - World Wide Web, Local networks, etc.
- Are ***Very Fast and getting faster!***
  - 10 Gigabit FC and Ethernet
- Have an open architecture based on commercial standards
  - Easily incorporate leading edge/legacy technology
    - » e.g. AF302 SBIR, CAIS to Fibre Channel bridge

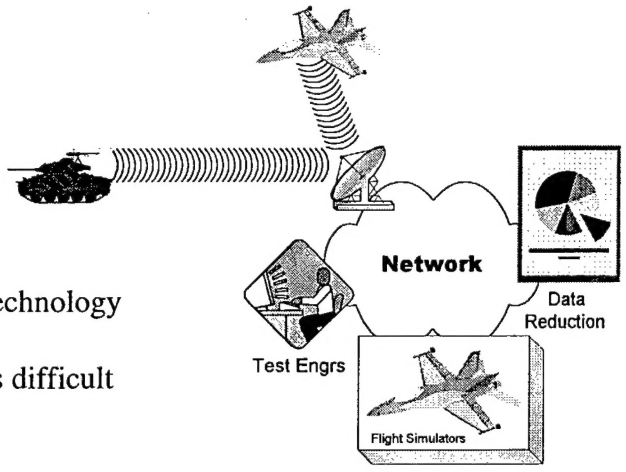
Ground-Based Networks

- Many standards groups addressing requirements.
- Traditional network arena



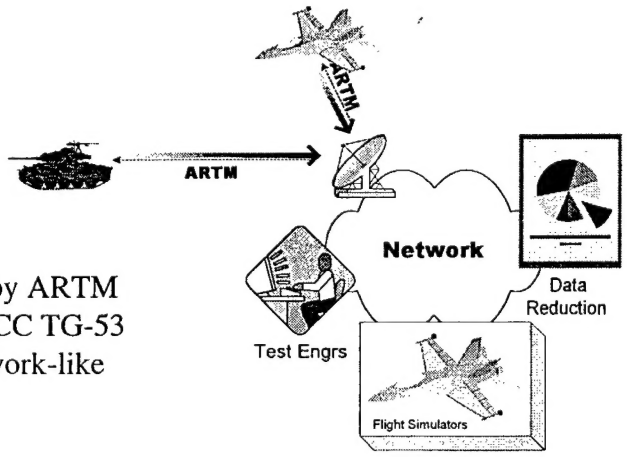
Traditional Systems

- Based on older technology
- Uni-directional
- Adaptive formats difficult

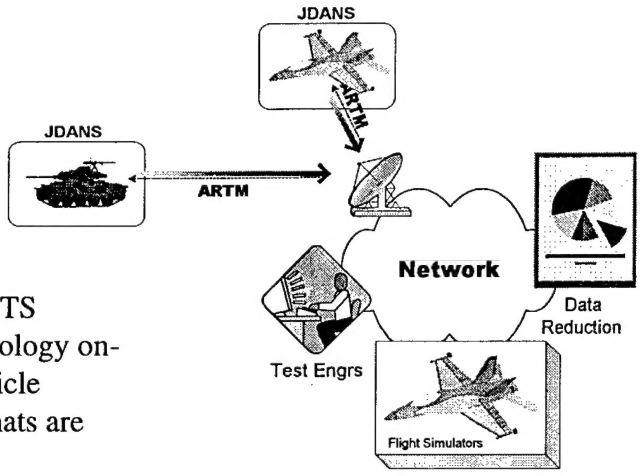


Packetized Telemetry

- Being worked by ARTM program and RCC TG-53
- Will allow network-like connectivity

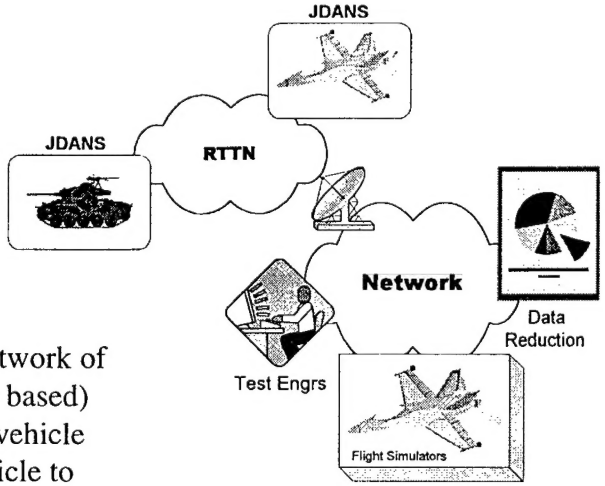


Data Acquisition Networks



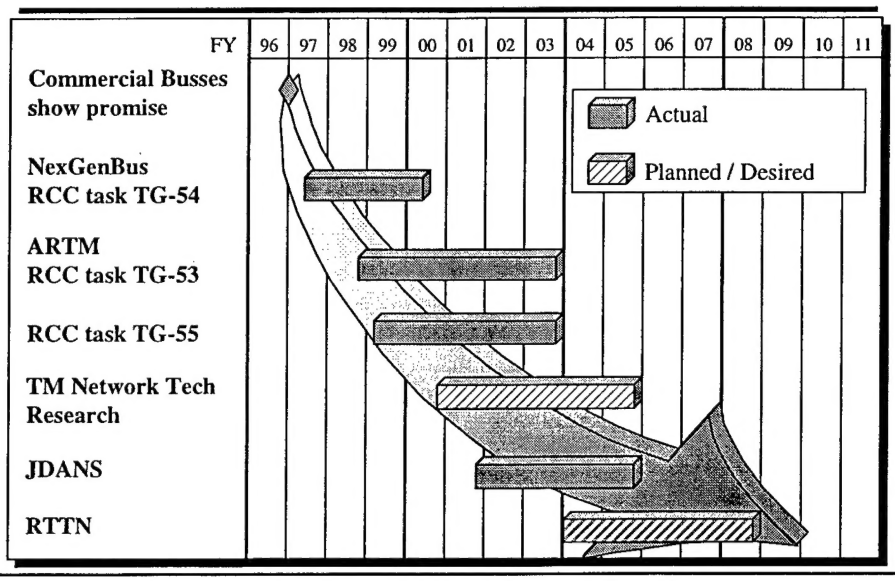
- Leverages COTS network technology on-board test vehicle
- Adaptive formats are second-nature

Telemetry Networks



- Treats entire data acquisition as a network of networks (Internet based)
- Enables seamless vehicle to vehicle and vehicle to ground connectivity

An Integrated Path to T&E Networks



Other DoD Efforts

• CENTS	OSD/Air Force	Current
• CAIS / FC Bridge	Navy/AF	Current
• Smart Sensors	OSD/Air Force	Proposed
• 2-RAD	OSD/Army	Current
• VISION	Army	Current
• ARTM	OSD/Air Force	Current
– On-board data management		
• Wireless Network	Navy	Complete
• FI 2010	OSD/Army	Current

"Close Encounters" Analogy

- Networks are not a new concept
  - Independently, for different reasons, through different processes
    - » Many groups have identified networks as the future solution
- We are now trying to address these efforts
  - Identify common requirements
  - Consolidate common or overlapping tasks

SUMMARY

- Very definite and critical need
- Data Acquisition Networks/Telemetry Networks
  - The missing link to Network-Centric Testing
  - Leverages COTS capabilities and products for T&E
- JDANS/RTTN
  - Broad Tri-service and industry support
  - Focuses on commercial interoperability network stds
- If we don't act in a timely fashion ...
  - Risk losing momentum
  - Incompatible point solutions will develop